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Interactive comment on “Gridded climate data from 5 GCMs of the Last Glacial Maximum downscaled to 30 arc s for Europe” by D. R. Schmatz et al.

Anonymous Referee #2

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Review of Schmatz et al. – Gridded climate data from 5 GCMs of the Last Glacial Maximum downscaled to 30 arc s for Europe – This manuscript describes a new method to downscale data from GCMs (~300 km in resolution) to a very high resolution (≤ 1 km) grid for Europe and for the Last Glacial Maximum. One of the main problems for this period is that the continents are more extensive because of the lower sea level, so that no reference (i.e. present day) data is available onto which LGM – ref climate anomalies can be added to obtain an LGM climate at high resolution. The authors actually focus on this problem, and the additional problem of the PMIP2 data for the reference climate being for the pre-industrial period and not the recent period, for which very high resolution data is available.

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While I find the topic of this manuscript very interesting because downscaling is indeed required for “paleo-impact” studies, I was quite disappointed by the manuscript.

1/ the resulting fields for the LGM for the 5 models are not shown, and therefore not discussed. This is frustrating, as the title of the manuscript announces these results. Most of the manuscript is actually about the present climatology and not the LGM. To be published, I really think that the manuscript should show and discuss the results for the LGM, which would indeed be interesting to a wide community, from biologists to archeologists.

2/ the LGM results are not compared to other model results (even the initial coarse resolution ones) or to climate reconstructions (e.g. Bartlein et al, already cited in the manuscript).

3/ the methods are generally well explained, but the choices (e.g. the 20 m a.s.l threshold) are not justified.

4/ PMIP3/CMIP5 data is actually available for the historical period, so there would be no need to adjust the pre-industrial results to the modern era. The method for this adjustment could actually be tested on the PMIP3-CMIP5 data.

5/The authors could actually consider GMD or ESD if they “just” want to publish their data set and downscaling method. But they need to insert the real results from their study and discuss them, and not to just give a method to obtain them. One very interesting outcome is the range of results they get for the LGM, not just one example for one month. The authors could also quantify the improvement (or not) with downscaling compared to paleoclimatic reconstructions

6/ At the beginning of the manuscript, the authors discuss possible factors having an impact on fine-scale climate: climate on areas exposed at the LGM and not for present day, but also differences in elevation and continentality. Those latter factors are not re-investigated afterwards, while they could be highly relevant, and so would the fine-scale

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ice sheet cover (especially over the Alps). How did they deal with these factors?

Given the topic of the manuscript, I would be ready to re-review it once it is improved, even if it is submitted in another EGU journal.

Interactive comment on Clim. Past Discuss., 11, 2585, 2015.

CPD

11, C1637–C1639, 2015

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